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EXAMINER
HUSSAIN, IMAD

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 20-54* is/are rejected.

7)☒ Claim(s) *18,19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage
        application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date *29 November 2005*.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____

DETAILED ACTION

1.   Claims 1-54 are presented for examination.

Priority

2.   Acknowledgment is made of applicant's claim for foreign priority under 35

U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No.

PCT/KR04/01148, filed on May 14, 2004.

Inventorship

3.   This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the

various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under

37 CFR 1.56 to point out the inventor and invention dates of each claim that was not

commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claim Objections

4.   Claims 8 and 34 are objected to because of the following informality: The claims

recite the limitation "the AHL (APDU Header Length) field has at least 3 bytes" but

Figure 4A shows that the APDU header is 3 bytes long such that the AHL field (8 bits)

contains a **value** of 3 [bytes]. For the purposes of examination, this limitation will be

interpreted as "the AHL value is at least 3 bytes". Appropriate correction is required.

Claim Rejections - 35 USC § 101

5.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
conditions and requirements of this title.

6.   Claims 29-54 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.

In this case, computer-related inventions whether descriptive or functionally

descriptive material are non-statutory categories when claimed as descriptive material

per se (see Warmerdam, 33 F.3d at 1360 USPQ2d at 1759), falling under the "process"

category (i.e. inventions at that consist of a series of steps or acts to be performed).

See 35 U.S.C. 100(b) ("The term process means, art, or method, and includes a new of

a known process, machine, manufacture, composition of matter or material").

Functional descriptive material: "data structures" representing descriptive material per

se or computer program representing computer listing per se (i.e. software per se) when

embodied in a computer-readable media are still not statutory because they are not

capable of causing functional change in the computer. However, a claimed computer-

readable storage medium encoded with a data structure, computer listing or computer

program, having defined structural and functional interrelationships between the data

structure, computer listing or computer program and the computer software and

hardware component, which permit the data structure's, listing or program's functionality

to be realized, is statutory (see MPEP 2106).

More specifically, claims 29-54 seem to be directed to a "storage medium"

storing code and data, lacking no defined structural and functional interrelationship

between the data structure (code and data) and hardware components which permit the

data structure's functionality to be realized, this is non-statutory subject matter.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 1, 5, 27, 29 and 53 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Jae-Min Lee et al (*A New Home Network Protocol For Controlling*

And Monitoring Home Appliances – HNCP, hereinafter HNCP) in view of S. Kent et al

(*RFC 2401 Security Architecture for the Internet Protocol*, hereinafter IPsec).

Regarding claim 1, HNCP teaches *a home network system* [HNCP: Abstract],

comprising:

   i.   *a network based on a predetermined protocol* [HNCP: Page 312

         Abstract];

at least one electric device connected to the network [HNCP: "home

appliance", Page 312 Abstract]; and

ii.   a network manager connected to the network, for controlling and/or

monitoring the electric device [HNCP: "Master", Page 313 Figure 3],

iii.   wherein the protocol comprises an application layer, a network

layer, a data link layer and a physical layer [HNCP: Page 312 Section 2.2

Paragraph 1], and

iv.   the physical layer further comprises a special protocol for providing

an interface [HNCP: "D type modem offers… physical layer", Page 313

Section 3 Paragraph 1] with a dependent transmission medium [HNCP:

"Power Line Carrier", Figure 3]

v.   wherein an application layer protocol data unit (APDU) is

transmitted between the application layer and the network layer [HNCP:

Figure 1], a network layer protocol data unit (NPDU) is transmitted

between the network layer and the data link layer and a data frame unit is

transmitted between the data link layer and the physical layer.

HNCP does not explicitly disclose that:

vi.   the network layer further comprises a home code control sub-layer

for managing a home code for network security when accessing the

dependent transmission medium

and

vii.   a network layer protocol data unit (NPDU) is transmitted between

the network layer and the home code control sub-layer, a home code

control sub-layer protocol data unit (HCNPDU) is transmitted between the

home code control sub-layer and the data link layer.

However, IPsec teaches a method for security at the network (IP) layer [IPsec:

Page 6 Section 3.1] including code [IPsec: "cryptographic key", Page 6 Section

3.1] management wherein a network layer protocol data unit [IPsec: "tunneled IP

packet", Page 7 Section 3.2] is transmitted between the network layer and IPsec

and between IPsec and the data link layer [IPsec: IPsec "Bump-in-the-stack"

implementation resides "between the native IP and the local network drivers",

Page 8 Section 3.3, and "IP Encapsulation with IP", Page 31 Section 5.1.2].

       HNCP and IPsec are analogous art in the same field of endeavor as both

cover network control and make use of the IP network protocol.

       It would have been obvious to a person having ordinary skill in the art at

the time the invention was made to utilize the security services of IPsec for

securing network communications in the system of HNCP. One of ordinary skill in

the art would have been motivated to modify the system of HNCP with the

security services of IPsec because in doing so, the system would allow for

confidentiality, authentication, and protection of network traffic without adversely

affecting users and components [IPsec: Page 4 Section 2.1].

Regarding claim 5, HNCP-IPsec teaches that *the HCNPDU* ["SDU"] *comprises a home code* ["house address"] *and the NPDU* [HNCP: Page 313 Figure 1].

Regarding claim 27, HNCP-IPsec teaches that *the Home Code* ["house address"] *has 4 bytes* [HNCP: Page 313 Figure 1].

Regarding claim 29, the claim comprises the same limitations as claim 1. The same rationale for rejection is applicable.

Regarding claim 53, the claim comprises the same limitations as claims 27 and 29. The same rationale for rejection is applicable.

5.   Claims 2-4, 7-17, 20-26, 28, 30-43, 46-52 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over HNCP-IPsec as applied to claim 1 above further in view of Sam-Chul Ha et al (WO/2002/097555, hereinafter NCS).

Regarding claim 2, HNCP-IPsec does not teach that the *APDU comprises an APDU header and a protocol data unit (PDU)*.

However, NCS teaches that an Application Layer's data unit (the body of the NPDU [HNCP: Figure 1]) comprises a Message Header and a Message [NCS: Figure 12].

HNCP-IPsec and NCS are analogous art in the same field of endeavor as both cover home network protocols.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to utilize the message design of NCS for formatting and transmitting messages in the system of HNCP-IPsec. One of ordinary skill in the art would have been motivated to modify the system of HNCP-IPsec with the message design of NCS because in doing so, the system would allow for low implementation cost and high efficiency [NCS: Page 3 Lines 5-6].

Regarding claim 3, HNCP-IPsec-NCS teaches that *the PDU is a message transmitted from an application software* [HNCP: Page 313 Section 2.2 Application Layer and Figure 1].

Regarding claim 4, HNCP-IPsec-NCS teaches that *the NPDU* ["packet"] *comprises an NPDU header* ["header"], *the APDU* ["body"] *and an NPDU trailer* ["trailer"] [NCS: Figure 12].

Regarding claim 7, HNCP-IPsec-NCS teaches that *the APDU header* ["message header"] *comprises an APDU length (AL)* ["ML"] *field, an APDU header length (AHL)* ["MHL"] *field and an application layer option (ALO)* ["PO"] *field* [NCS: Figure 12].

Regarding claim 8, HNCP-IPsec-NCS teaches that *the AHL value is at least 3 bytes* [NCS: Figure 12 (the message header is 3 bytes long)].

Regarding claim 9, HNCP-IPsec-NCS teaches that *the NPDU header* ["packet header"] *comprises a start of LnCP packet (SLP)* ["HC"] *field, a destination address (DA)* ["RA"] *field, a sender address (SA) field, a packet length (PL) field and a network layer control (NLC) field* ["AP" through "PN"] [NCS: Figure 12].

Regarding claim 10, HNCP-IPsec-NCS teaches that *the SLP field* ["HC"] *has 8 bits, the DA field* ["RA"] *has 16 bits, the SA field has 16 bits, and the PL field has 8 bits. and the NLC field* ["AP" through "PN"] *has 24 bits* [3+5+8+4+2+2] [NCS: Figure 12].

Regarding claim 11, HNCP-IPsec-NCS teaches that *the NPDU header* ["packet header"] *is formed in order of the SLP* ["HC"] *field, the DA* ["RA"] *field, the SA field, the PL field and the NLC field* ["AP" through "PN"] [NCS: Figure 12].

Regarding claim 12, HNCP-IPsec-NCS teaches that *the NLC field* ["AP" through "PN"] *comprises a service priority (SP)* ["AP"] *field, an NPDU header length (NHL) field* ["PHL"]*, a protocol version (PV) field, a network layer packet type (NPT)* ["PT"] *field, a transmission counter (TC)* ["RC"] *field and a packet number (PN) field* [NCS: Figure 12].

Regarding claim 13, HNCP-IPsec-NCS teaches that *the SP* ["AP"] *field has 3 bits, the NHL* ["PHL"] *field has 5 bits, the PV field has 8 bits, the NPT* ["PT"] *field has 4 bits, the TC* ["RC"] *field has 2 bits and the PN field has 2 bits* [NCS: Figure 12].

Regarding claim 14, HNCP-IPsec-NCS teaches that *the NLC field* ["AP" through "PN"] *is formed in order of the SP* ["AP"] *field, the NHL* ["PHL"] *field, the PV field, the NPT* ["PT"] *field, the TC* ["RC"] *field and the PN field* [NCS: Figure 12].

Regarding claim 15, HNCP-IPsec-NCS teaches that *the SP* ["AP"] *field is set as a first code for transmitting an urgent message* ["emergency"], *a second code for transmitting a general data or an event message according to an online or offline status change* ["network connection state"], *a third code for transmitting a general event message or a notification message for composing a network* ["normal communication"], *and a fourth code for transmitting a data by download or upload mechanism* ["mass transmission of data"] [NCS: Page 15 Lines 10-17].

Regarding claim 16, HNCP-IPsec-NCS teaches that *the first code is 0, the second* [fourth] *code is 1, the third code is 2 and the fourth* [second] *code is 3* [NCS: Page 15 Lines 10-17].

Regarding claim 17, HNCP-IPsec-NCS teaches that *the upper 4 bits of the PV field form a version field, and the lower 4 bits thereof form a sub-version field* (values of 0-15 require 4 bits) [NCS: Page 15 Lines 23-26].

Regarding claim 20, HNCP-IPsec-NCS teaches that *the TC ["RC"] field is set as a first code ["count"] showing initial transmission, and the first code is* modified to a unique value for retransmissions (as the master can only retransmit three times for a total of four transmissions, a full use of the 2 assigned bits) [NCS: Page 16 Line 26-Page 17 Line 3].

HNCP-IPsec-NCS does not explicitly disclose that the code is increased by a predetermined size upon the retry request.

However, it is well known in the art to count up by 1 to iterate through all possible bit values.

Regarding claim 21, HNCP-IPsec-NCS does not explicitly teach that *the first code is 0 and the size is 1* [NCS: Page 16 Line 26-Page 17 Line 3].

However, it is well known in the art to count from 0 in increments of 1.

Regarding claim 22, HNCP-IPsec-NCS teaches that *the PN field is set to be increased by a predetermined size in every new packet transmission, and to maintain a previous value in the same packet retry* [NCS: Page 17 Lines 4-17].

Regarding claim 23, HNCP-IPsec-NCS teaches that *the size is 1* [NCS: Page 17 Line 7].

Regarding claim 24, HNCP-IPsec-NCS teaches that *the NPDU trailer comprises a cyclic redundancy check (CRC) field for checking an error, and an end of LnCP packet (ELP)* ["ETX"] *field* [NCS: Figure 12].

Regarding claim 25, HNCP-IPsec-NCS teaches that *the NPDU trailer is formed in order of the CRC field and the ELP* ["ETX"] *field* [NCS: Figure 12].

Regarding claim 26, HNCP-IPsec-NCS teaches that *the CRC field has 16 bits and the ELP* ["ETX"] *field has 8 bits* [NCS: Figure 12].

Regarding claim 28, HNCP-IPsec-NCS teaches that *the protocol is a living network control protocol (LnCP)* [NCS: Page 6 Lines 1-2].

Regarding claims 30, 31, 32, 33-43, 46-52 and 54, the claims comprise the same limitations as claims 4, 2, 3, 7-17, 20-26 and 28, respectively, and claim 29. The same rationale for rejection is applicable.

6.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over HNCP-

IPsec as applied to claim 1 above further in view of Seung-Cheon Kim (US

20030088703 A1, hereinafter Kim).

        Regarding claim 6, HNCP-IPsec does not explicitly disclose that *the data frame*

        unit comprises a frame header, the NPDU or HCNPDU and a frame trailer.

                However, Kim teaches that the data frame includes a frame header, a

        body composed of an LnCP packet (network packet or NPDU), and a frame

        trailer [Kim: Page 1 Paragraph 0011 and Figure 2].

                HNCP-IPsec and Kim are analogous art in the same field of endeavor as

        both cover home network protocols.

                It would have been obvious to a person having ordinary skill in the art at

        the time the invention was made to utilize the frame design of Kim for formatting

        and transmitting messages in the system of HNCP-IPsec. One of ordinary skill in

        the art would have been motivated to modify the system of HNCP-IPsec with the

        frame design of Kim because in doing so, the system would be usable with a

        PLC network [Kim: Page 1 Paragraph 0004].

                                    Allowable Subject Matter

7.   Claims 18-19 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

Regarding claim 18, HNCP-IPsec-NCS teaches the system of claim 12, *wherein the NPT* ["PT"] *field is set as a first code for a request packet, a second code for a successful response packet, a third code for a failed response packet, a fourth code for a notification packet* [NCS: Page 16 Lines 17-25]. HNCP-IPsec-NCS does not teach *a fifth code for an interface with the home code control sub-layer.*

Regarding claim 19, HNCP-IPsec-NCS teaches that *the first code is 0, the second code is 4, the third code is 5, and the fourth code is 8* [NCS: Page 16 Lines 17-25]. HNCP-IPsec-NCS does not teach that *the fifth code is 13 to 15.*

Double Patenting
PROVISIONALLY OBVIOUS-TYPE DOUBLE PATENTING

8.   The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d

1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d

2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re*

Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438,

164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644

(CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d)

may be used to overcome an actual or provisional rejection based on a nonstatutory

double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of

activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a

terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with

37 CFR 3.73(b).

9.   Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claim 1 of copending Application No.

10/558,434. Although the conflicting claims are not identical, they are not patentably

distinct from each other because the subject matter of the application claim is fully

disclosed in the co-pending application and covered by the co-pending claim.

This is a <u>provisional</u> obviousness-type double patenting rejection because the

conflicting claims have not in fact been patented.

10.   **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the text of the passage taught by the prior art or disclosed by the examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Pertinent prior art citation(s)

11.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Lee et al. *Home Network Control Protocol for Networked Home Appliances and Its Applications* (Describes the implementation of HNCP and its protocol layers).

Conclusion

12.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Imad Hussain whose telephone number is 571-270-3628. The examiner can normally be reached on Monday through Thursday from 0730 to 1700.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beatriz Prieto can be reached on 571-272-3902. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/IH/
Imad Hussain
Examiner   /Prieto B./
                                    Supervisory Patent Examiner, Art Unit 4117